

In the Claims

CLEAN VERSION OF ALL CLAIMS AFTER AMENDMENT:

1 1. (Amended twice) A method of forming a transistor, comprising:
2 forming an alignment component on a substrate of a semiconductor
3 material;
4 depositing a metal layer over the substrate and the alignment component;
5 reacting the metal layer with the semiconductor material of the substrate to
6 form two silicide regions, the silicide regions having inner surfaces which face
7 one another, wherein an upper portion of each inner surface contacts the
8 alignment component and a lower portion of each inner surface contacts the
9 semiconductor material of the substrate;
10 removing the alignment component; and
11 replacing the removed alignment component with a conductive gate.

1 2. The method of claim 1 wherein the alignment component is non-
2 conductive.

1 3. The method of claim 2 wherein the alignment component is made of a
2 material selected from the group consisting of a silicon oxide and silicon nitride.

1 4. The method of claim 1 wherein the alignment component is made of a
2 material which does not react with the metal layer when the metal layer is
3 reacted with the semiconductor material of the substrate.

1 5. The method of claim 1 wherein the alignment component has a thickness of
2 between 1000Å and 2500Å.

1 6. The method of claim 1 wherein the alignment component is less than 0.10
2 microns wide.

1 7. The method of claim 1 wherein the metal layer is selected from the group
2 consisting of a material comprising tungsten, cobalt and titanium.

1 8. The method of claim 1 wherein the metal layer is between 300Å and 400 Å
2 thick.

Sub 1
Sub 2
1 9. (Amended) The method of claim 1 wherein the silicide regions have lower
2 surfaces located lower than a lower surface of the alignment component.

Sub 3
Sub 4
Sub 5
1 10. (Amended) The method of claim 1 wherein the alignment component is
2 replaced with the gate according to a method comprising:
3 depositing a layer over the silicide regions and the alignment component;
4 planarizing the layer at least until the alignment component is exposed;
5 etching the alignment component at least until the substrate is exposed to
6 leave an opening between the inner surfaces of the silicide regions; and
7 forming the gate in the opening.

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1 11. (Amended) The method of claim 10 wherein, after the etching of the
2 alignment component, the upper portions of the inner surfaces are exposed.

1 12. The method of claim 10 wherein the alignment component and the layer
2 are made of different materials, one being made of a silicon oxide and the other
3 being made of silicon nitride.

1 13. The method of claim 1 wherein the gate is formed according to a method
2 comprising:
3 depositing a gate dielectric layer; and
4 forming a gate electrode on the gate dielectric layer.

1 14. The method of claim 13 wherein the gate dielectric layer is less than 10Å
2 thick.

1 15. The method of claim 13 wherein the gate electrode is made out of a metal.

1 16. The method of claim 1, further comprising:
2 forming doped regions which extend from the silicide regions in
3 underneath the gate.

1 17. The method of claim 13 wherein the gate dielectric layer has a dielectric
2 constant of at least 100.

1 18. The method of claim 13 wherein the gate dielectric layer comprises a
2 material selected from the group consisting of strontium titanate, and barium
3 strontium titanate.

1 19. The method of claim 17 wherein the gate electrode comprises a material
2 selected from the group consisting of platinum, a conductive metal oxide, and
3 ruthenium oxide.

MARKED UP VERSION OF AMENDED CLAIMS:

1. (Amended twice) A method of forming a transistor, comprising:

forming an alignment component on a substrate of a semiconductor material;

depositing a metal layer over the substrate and the alignment component;

reacting the metal layer with the semiconductor material of the substrate to form two silicide regions, the silicide regions having inner surfaces which face one another, wherein an upper portion of each inner surface contacts the alignment component and a lower portion of each inner surface contacts the semiconductor material of the substrate;

removing the alignment component; and

replacing the removed alignment component with a conductive gate.